

2023
M.E. Electrical Engineering (Power System)
First Semester
EE-8107: Smart Grid Technologies

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt any five questions.

x-x-x

- I. a) Define smart grid concept and explain its necessity.
b) Explain functions of smart grid components. (5,5)
- II. a) Explain how the automatic meter reading can make the system smarter.
b) List the smart appliances and describe an integration of smart appliances in to grid for home and building automation. (5,5)
- III. a) Explain how the reliability of smart grid can be enhanced by integrating intelligent electronic devices into it.
b) Explain the concept of micro grid and further describe the issues of interconnecting the micro grid with the utility grid. (5,5)
- IV. a) Describe the IP based protocols.
b) Explain about fuel cells and micro turbines. (5,5)
- V. a) What is a wide area measurement system? Explain in detail.
b) Explain about the energy storage technologies. (5,5)
- VI. a) What are the various types of converters for smart grid? Explain any one in detail.
b) Describe the islanding need and benefits in micro grid. (5,5)
- VII. a) What are the dedicated and shared communication channels? Explain in detail.
b) Explain pumped hydro and compressed air energy storage. (5,5)

P.T.O.

(2)

VIII. a) Explain the different methods of islanding detection.

b) Explain the following:

(i) Signal conditioning and acquisition

(ii) Bay controller

(iii) Remote terminal units

(5,5)

x-x-x